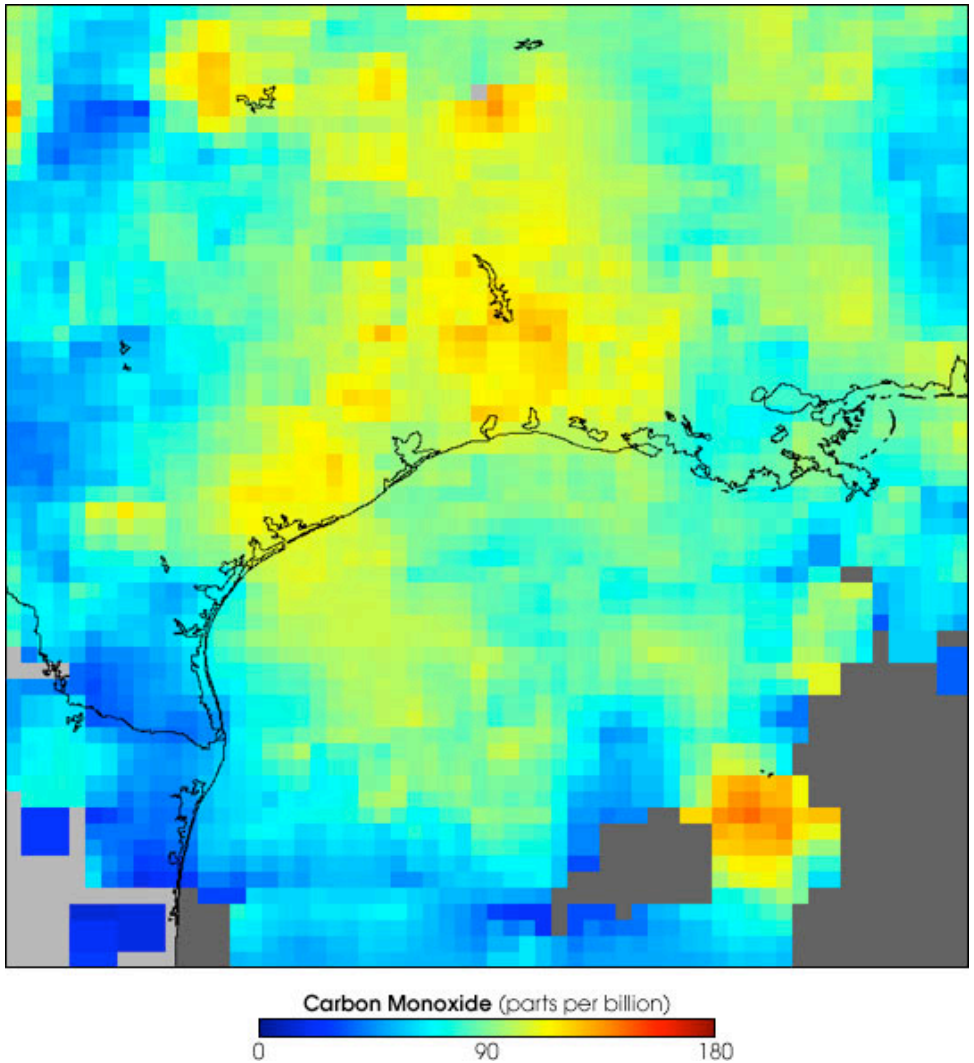
AIRS and MOPITT CO

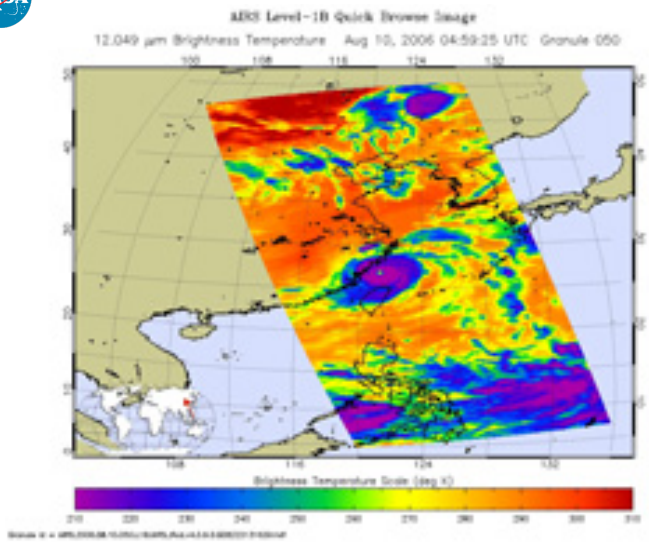


CO plumes at an altitude of roughly 2 km (700 millibars) over the Houston area and extending out over the Bay of Galveston. This image represents a composite of data collected over a 10-day period, September 6-15, 2002, by MOPITT.

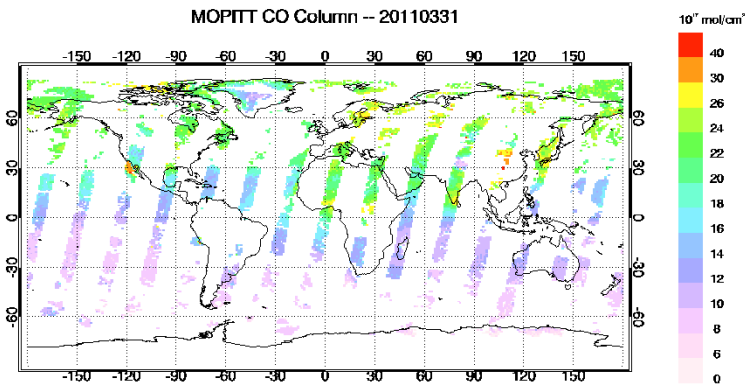
http://earthobservatory.nasa.gov/IOTD/view.php?id=3173

Current CO Sensors

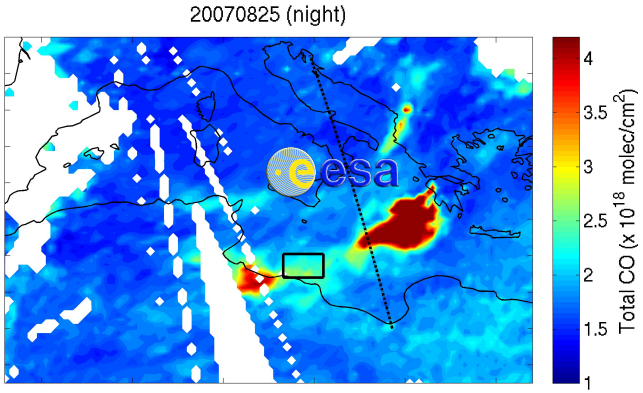
AIRS – Atmospheric Infrared Sounder



MOPITT – Measurements of Pollution in The Troposphere



IASI – Infrared Atmospheric Sounding Interferometer

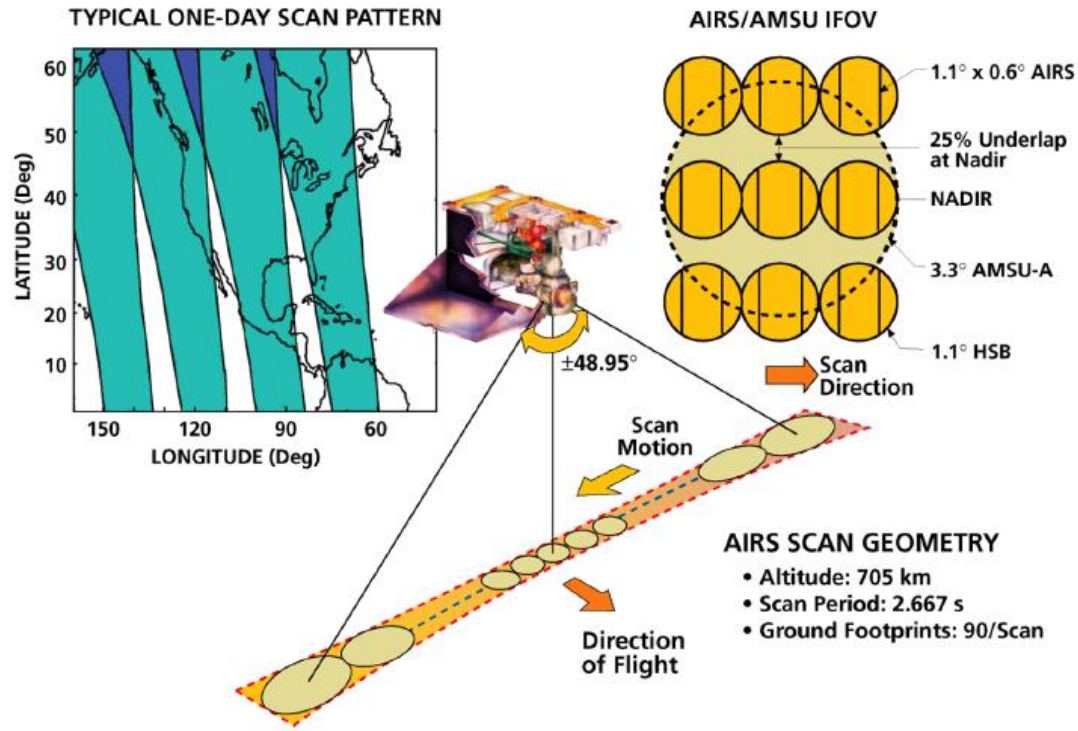


MOPITT- Measurements of Pollution In The Troposphere

- Operational since March 2000
- A nadir sounding instrument
- Pixel resolution = 22km × 22km
- Swath width = 640 km
- Overpass times = 10:00 AM
- Vertical profiles of CO are obtained at 4.7 μm (thermal infrared – TIR – band)
  - Profile Units = Parts per Billion Volume mixing ratio (ppbv)
- Column CO are obtained at 2.2-2.4 μm (Near-infrared – NIR - band)
  - Column Units = molecules/cm2
- Current Version 6
- 9 vertical layers 900hPa – 100hPa
- Final products are the Level 3 gridded data

HOMEPAGE = http://www.acd.ucar.edu/mopitt/

AIRS



- Operational since Sept. 2002
- A nadir sounding instrument.
- Pixel size = 14 km at nadir
  41 x 21 km edges
- Swath width = 1650 km
- Overpass times
  - 13:30 AM (Ascending orbit)
  - 13:30 PM (Descending orbit)
- 9 vertical layers (904.866 hPa – 0.016 hPa)
  - Profile Units = Volume mixing ratio
- Total Column CO measurements provided in units = molecules/cm2
- Data Source: L2 orbit and L3 gridded $1^{o} \times 1^{o}$ resolution
- Version 6 just came out – available Level 2 only. Level 3 still V5.

HOMEPAGE: http://airs.jpl.nasa.gov

Data Formats

Aura data (OMI and TES) are stored in HDF5 format

Airs and MOPITT data are stored in HDF4 format

File Names

AIRS

Level 3: AIRS.2013.03.07.L3.RetStd_IR001.v5.0.14.0.G13067153748.hdf

Date Level Product Type Version

Level 2: AIRS.2009.12.03.131.L2.RetStd.v5.0.14.0.G2002123120634.hdf

Granule number = There are 240 granules/day

Short Name Date

MOPITT L3: MOP03N-20020119-L3V3.1.2.hdf

MOPITT Level 2, 3 Short names

Level 3 | Level 2 | Level 1 | Level 0 | Documentation

Level Description: Derived Carbon Monoxide profiles

Products	Temporal Resolution	Spatial Resolution	Temporal Coverage
MOP02 (HDF) MOPITT Derived CO Level 2 Data	Observations every 0.4 seconds.	Swath	03/03/2000 - Present
MOP02J (HDF) MOPITT Derived CO (Near and Thermal Infrared Radiances)	Observations every 0.4 seconds.	Swath	03/03/2000 - Present
MOP02N (HDF) MOPITT Derived CO (Near Infrared Radiances)	Observations every 0.4 seconds.	Swath	03/03/2000 - Present
MOP02T (HDF) MOPITT Derived CO (Thermal Infrared Radiances)	Observations every 0.4 seconds.	Swath	03/03/2000 - Present

Level 3 | Level 2 | Level 1 | Level 0 | Documentation

Level Description: Carbon Monoxide gridded data. Daily averages and monthly means.

Products	Temporal Resolution	Spatial Resolution	Temporal Coverage
MOP03J (HDF) MOPITT CO gridded daily averages (Near and Thermal Infrared Radiances)	Observations every 0.4 seconds	Swath	03/03/2000 - Present
MOP03N (HDF) MOPITT CO gridded daily averages (Near Infrared Radiances)	Observations every 0.4 seconds	Swath	03/03/2000 - Present
MOP03T (HDF) MOPITT CO gridded daily averages (Thermal Infrared Radiances)	Observations every 0.4 seconds.	Swath	03/03/2000 - Present
MOP03JM (HDF) MOPITT CO gridded monthly means (Near and Thermal Infrared Radiances)	Observations every 0.4 seconds.	Swath	03/03/2000 - Present
MOP03NM (HDF) MOPITT CO gridded monthly means (Near Infrared Radiances)	Observations every 0.4 seconds.	Swath	03/03/2000 - Present
MOP03TM (HDF) MOPITT CO gridded monthly means (Thermal Infrared Radiances)	Observations every 0.4 seconds.	Swath	03/03/2000 - Present
MOP03 (HDF) MOPITT CO gridded daily averages	Observations every 0.4 seconds.	Swath	03/03/2000 - Present
MOP03M (HDF) MOPITT CO gridded monthly means	Observations every 0.4 seconds.	Swath	03/03/2000 - Present

Access to AIRS CO data/images

- GES-DISC
  - Level 2 and 3
  - HDF4 and NetCDF format

- AIRS Near Real Time (NRT) Images and Products
  - Uses Level 2 ungridded data
  - Outputs include:
    - PNG, GeoTIFF images
    - KMZ format for Google Earth (both daytime and nighttime images)
  - CAVEAT: Only stores images going back 9 days from the present day.
- GIOVANNI
  - Uses Level 3 $1^{o}X1^{o}$ gridded data
  - Outputs include:
    - Subset data in ASCII, NetCDF
    - KMZ format for Google Earth visualizations
- HDFLook – with limited capabilities.
- Panoply
  - Used to visualize HDF format files
  - Used to convert HDF to KMZ files for Google Earth visualizing

http://airs.jpl.nasa.gov/data/get_AIRS_data/

AIRS
Weather and Climate from Space

Search Go

- Home
- Weather
- Climate
- Composition
- Mission
- Science
- Data
  - Get AIRS Data
  - Data Product Descriptions
  - Geophysical Data Products
  - Product Accuracies
  - Validation
  - Data Readers
  - Algorithms
  - Direct Broadcast
  - Skew_T Plotting Tool
  - Data Documents
  - Data Users News
  - FAQ
- Images

DATA

Get AIRS Data

AIRS data products are free and are available to the science community and general public

AIRS data is distributed by the NASA Goddard Earth Sciences Data Information and Services Center (DISC). At the DISC you will find information and tools designed to help you find the AIRS data you need.

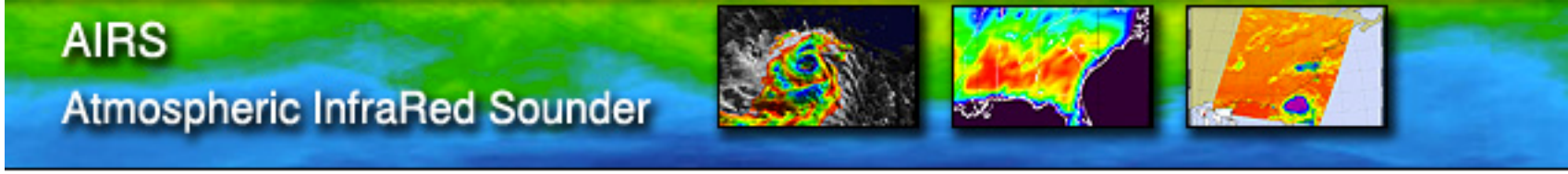
Get AIRS Version 6 Data

What's new about AIRS version 6 data >
Get AIRS version 6 data >
AIRS version 6 documentation >

Get AIRS Carbon Dioxide Data

Two pages have been created specifically for the AIRS carbon dioxide data product:

Get AIRS carbon dioxide data >
About AIRS carbon dioxide data >



Product Information and access to AIRS data can be found here:

http://disc.sci.gsfc.nasa.gov/AIRS/data-holdings/by-data-product/data_products.shtml

Take you to the **Mirador** search engine. There is the optoin to on vert to Net CDF format

Goes to a product summary page with links to the Instrument and product documentation

Level 2 AIRS2RET and
Level 3 AIRS3STD are the standards daily products

HSB is a humidity sensor that failed in 2003

AMSU is a temperature sounder

AIRS Level-2 Products (Version 5): without-HSB // AIRS IR Only // with-HSB

Data Product	Description	Spatial Resolution	Temporal Coverage	Average Item Size (Mb)	GES DISC Data Access
AIRX2RET	L2 standard retrieval product using AIRS IR and AMSU, without-HSB	45 km @ nadir; 28 atm pressure levels; 14 pressure layers for H2O related variables...	2002-08-30 - present	2.3	Search
AIRS2RET	L2 standard retrieval product using AIRS IR-only	45 km @ nadir; 28 atm pressure levels; 14 pressure layers for H2O related variables...	2007-05-31 - present	2.3	Search
AIRH2RET	L2 standard retrieval using AIRS IR and AMSU, with-HSB	45 km @ nadir; 28 atm pressure levels; 14 pressure layers for H2O related variables...	2002-08-30 - 2003-02-05	2.3	Search

AIRS Level-3 Products (Version 5): without-HSB // AIRS IR Only // with-HSB

Data Product	Description	Spatial Resolution	Temporal Coverage	Average Item Size(Mb)	GES DISC Data Access
AIRX3STD	L3 daily gridded standard retrieval product using AIRS IR and AMSU, without-HSB	1°x1°; 24 atm pressure levels; 12 pressure levels for H2O related variables.	2002-08-30 - present	71	Search
AIRS3STD	L3 daily gridded standard retrieval product using AIRS IR-only	1°x1°; 24 atm pressure levels; 12 pressure levels for H2O related variables.	2007-06-01 - present	54	Search
AIRH3STD	L3 daily gridded standard retrieval product using AIRS IR and AMSU, with-HSB	1°x1°; 24 atm pressure levels; 12 pressure levels for H2O related variables.	2002-08-30 - 2003-02-05	75	Search

Mirador Earth Science Data Search Tool

http://mirador.gsfc.nasa.gov/cgi-bin/mirador/homepageAlt.pl?keyword=AIRS2R

Greenbelt News Popular SSAI Weather Google Gmail Dictionary.com SEACIONS WORK

Mirador Earth Science Data Searc... http://disc.sci.gsfc.nasa.gov/AIRS...

You are here: Keyword Search

Keyword | Projects | Science A

Keyword: AIRS2RET Time Span: 2012-07-04 To: 2012-07-04

Location: (24.69,-126.04),(51.94,-73.6 Update Map Search GES-DISC

Advanced Search

Keyword | Projects | Science Areas

Data Sets Results 1 - 1 of 1 for **AIRS2RET** (1 seconds)

-More Services (e.g. http download, format conversion, subsets etc) are available for the data set(s). Whenever you add files to the shopping cart, you will be presented with options for selecting a service and service parameters for any data set which has these services.

AIRS/Aqua Level 2 Standard physical retrieval (AIRS-only) (AIRS2RET)

| View Files | Info | Data Calendar

Approx. 16 files found (Avg Size: 2.075 MB)

Parameters: SKIN TEMPERATURE, SURFACE AIR TEMPERATURE, AIR TEMPERATURE, TROPOPAUSE, PRECIPITABLE WATER, WATER VAPOR, OXYGEN COMPOU...

Spatial Resolution: 50 km x 50 km

Temporal Resolution: 6 Minutes

Select All | Reset | List Selected Files By Time | See Timeline View | Add Selected Files To Cart

NASA Search Results

(Number of **files found** may not be entirely accurate)

Page: 1

Select All in Page	Start Time
AIRS.2012.07.04.214.L2.RetStd_IR.v5.0.14.0.G12187114452.hdf (2.06 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 21:23:23 (Day) Metadata
AIRS.2012.07.04.213.L2.RetStd_IR.v5.0.14.0.G12187114451.hdf (2.05 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 21:17:23 (Day) Metadata
AIRS.2012.07.04.212.L2.RetStd_IR.v5.0.14.0.G12187114454.hdf (2.05 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 21:11:23 (Day) Metadata
AIRS.2012.07.04.197.L2.RetStd_IR.v5.0.14.0.G12187114418.hdf (2.07 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 19:41:23 (Day) Metadata
AIRS.2012.07.04.196.L2.RetStd_IR.v5.0.14.0.G12187114402.hdf (2.12 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 19:35:23 (Day) Metadata
AIRS.2012.07.04.181.L2.RetStd_IR.v5.0.14.0.G12187114340.hdf (2.13 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 18:05:23 (Day) Metadata
AIRS.2012.07.04.180.L2.RetStd_IR.v5.0.14.0.G12187114355.hdf (2.10 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 17:59:23 (Day) Metadata
AIRS.2012.07.04.179.L2.RetStd_IR.v5.0.14.0.G12187114334.hdf (2.15 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 17:53:23 (Day) Metadata
AIRS.2012.07.04.164.L2.RetStd_IR.v5.0.14.0.G12187113502.hdf (2.06 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 16:23:23 (Day) Metadata
AIRS.2012.07.04.118.L2.RetStd_IR.v5.0.14.0.G12187103555.hdf (1.95 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 11:47:23 (Both) Metadata
AIRS.2012.07.04.103.L2.RetStd_IR.v5.0.14.0.G12187113355.hdf (2.06 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 10:17:23 (Night) Metadata
AIRS.2012.07.04.102.L2.RetStd_IR.v5.0.14.0.G12187113353.hdf (2.04 MB) One Click Download: HDF (Quality Screened) | HDF (FTP) | HDF (HTTP) | NetCDF | OPeNDAP	2012-07-04 10:11:23 (Night) Metadata

Quality Screened = Filters all data variables based on the science team recommendations.
Available ONLY for Level 2 data!

What's inside an AIRS Level 3 data file?

Name	Long Name
AIRS.2011.01.03.L3.RetStd_IR001.v5.0.14.0.G11006101955.hdf	AIRS.2011.01.03.L3.RetStd_IR001.v5.0.14.0.G110...
ascending	
Data Fields	
Grid Attributes	
ascending_MW_only	
coremetadata	
coremetadata.1	
descending	
descending_MW_only	
location	
StructMetadata.0	
StructMetadata.1	

Name	Long Name
AIRS.2011.01.03.L3.RetStd_IR001.v5.0.14.0.G11006101955.hdf	AIRS.2011.01.03.L3.RetStd_IR001.v5.0.14.0.G110...
ascending	ascending
Data Fields	ascending/Data Fields
CH4_dof_A	
CH4_dof_A_ct	
CH4_dof_A_sdev	
CH4_Eff_Press_A	
CH4_Eff_Press_A_ct	
CH4_Eff_Press_A_sdev	
CH4_VMR_eff_A	
CH4_VMR_eff_A_ct	
CH4_VMR_eff_A_err	
CH4_VMR_eff_A_sdev	
CloudFrc_A	
CloudFrc_A_ct	
CloudFrc_A_err	
CloudFrc_A_sdev	
CloudTopPres_A	
CloudTopPres_A_ct	
CloudTopPres_A_err	
CloudTopPres_A_sdev	
CloudTopTemp_A	
CloudTopTemp_A_ct	
CloudTopTemp_A_err	
CloudTopTemp_A_sdev	
ClrOLR_A	
ClrOLR_A_ct	
ClrOLR_A_sdev	
CO_dof_A	
CO_dof_A_ct	
CO_dof_A_sdev	
CO_Eff_Press_A	
CO_Eff_Press_A_ct	
CO_Eff_Press_A_sdev	

Name	Long Name
CO_total_column_A	CO_total_column_A
CO_total_column_A_ct	CO_total_column_A_ct
CO_total_column_A_sdev	CO_total_column_A_sdev
CO_Verticality_A	CO_Verticality_A
CO_Verticality_A_ct	
CO_Verticality_A_sdev	
CO_VMR_eff_A	
CO_VMR_eff_A_ct	
CO_VMR_eff_A_err	
CO_VMR_eff_A_sdev	
CoarseCloudFrc_A	
CoarseCloudFrc_A_ct	
CoarseCloudFrc_A_sdev	
CoarseCloudPres_A	
CoarseCloudPres_A_ct	
CoarseCloudPres_A_sdev	
CoarseCloudTemp_A	
CoarseCloudTemp_A_ct	
CoarseCloudTemp_A_sdev	
EmisIR_A	
EmisIR_A_ct	
EmisIR_A_err	
EmisIR_A_sdev	
FineCloudFrc_A	
FineCloudFrc_A_ct	
FineCloudFrc_A_sdev	
GPHeight_A	
GPHeight_A_ct	
GPHeight_A_sdev	
H2OVapMMR_A	
H2OVapMMR_A_ct	
H2OVapMMR_A_err	
H2OVapMMR_A_sdev	

Name	Long Name
OLR_A	OLR_A
OLR_A_ct	OLR_A_ct
OLR_A_sdev	OLR_A_sdev
RelHumid_A	RelHumid_A
RelHumid_A_ct	RelHumid_A_ct
RelHumid_A_sdev	RelHumid_A_sdev
RelHumidLiq_A	RelHumidLiq_A
RelHumidLiq_A_ct	RelHumidLiq_A_ct
RelHumidLiq_A_sdev	RelHumidLiq_A_sdev
SurfAirTemp_A	SurfAirTemp_A
SurfAirTemp_A_ct	SurfAirTemp_A_ct
SurfAirTemp_A_err	SurfAirTemp_A_err
SurfAirTemp_A_sdev	SurfAirTemp_A_sdev
SurfPres_A	SurfPres_A
SurfPres_A_ct	SurfPres_A_ct
SurfPres_A_sdev	SurfPres_A_sdev
SurfSkinTemp_A	SurfSkinTemp_A
SurfSkinTemp_A_ct	SurfSkinTemp_A_ct
SurfSkinTemp_A_err	SurfSkinTemp_A_err
SurfSkinTemp_A_sdev	SurfSkinTemp_A_sdev
Temperature_A	Temperature_A
Temperature_A_ct	Temperature_A_ct
Temperature_A_err	Temperature_A_err
Temperature_A_sdev	Temperature_A_sdev
TotalCounts_A	TotalCounts_A
TotCldLiqH2O_A	TotCldLiqH2O_A
TotCldLiqH2O_A_ct	TotCldLiqH2O_A_ct
TotCldLiqH2O_A_err	TotCldLiqH2O_A_err
TotCldLiqH2O_A_sdev	TotCldLiqH2O_A_sdev
TotH2OVap_A	TotH2OVap_A

TotO3_A	TotO3_A
TotO3_A_ct	TotO3_A_ct
TotO3_A_err	TotO3_A_err
TotO3_A_sdev	TotO3_A_sdev
TropHeight_A	TropHeight_A
TropHeight_A_ct	TropHeight_A_ct
TropHeight_A_sdev	TropHeight_A_sdev
TropPres_A	TropPres_A
TropPres_A_ct	TropPres_A_ct
TropPres_A_sdev	TropPres_A_sdev
TropTemp_A	TropTemp_A
TropTemp_A_ct	TropTemp_A_ct
TropTemp_A_sdev	TropTemp_A_sdev

HDFView

http://www.hdfgroup.org/products/java/hdf-java-html/hdfview/

The HDF Group

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- Downloads
- HDFView
- JNI Libraries
- HDF-Object
- Java Docs
- HDF Data
- Licenses

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HDFVIEW

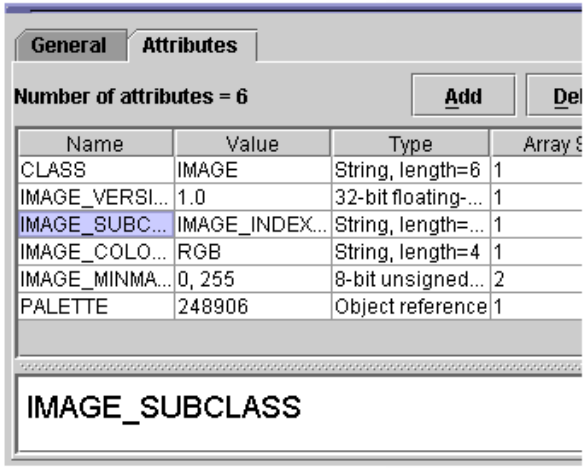
HDFView is a visual tool for browsing and editing HDF4 and HDF5 files. Using HDFView, you can

- view a file hierarchy in a tree structure
- create new file, add or delete groups and datasets
- view and modify the content of a dataset
- add, delete and modify attributes

About This Release
- new features and major changes of the latest version

the User's Guide
- information on how to use the HDFView

the Module Guide
- instruction on how to implement HDFView modules



Download HDFView 2.10

HDFView is installed as part of the HDF-Java binary installation. Pre-built binaries are available on the HDF-Java Download page.

Documentation

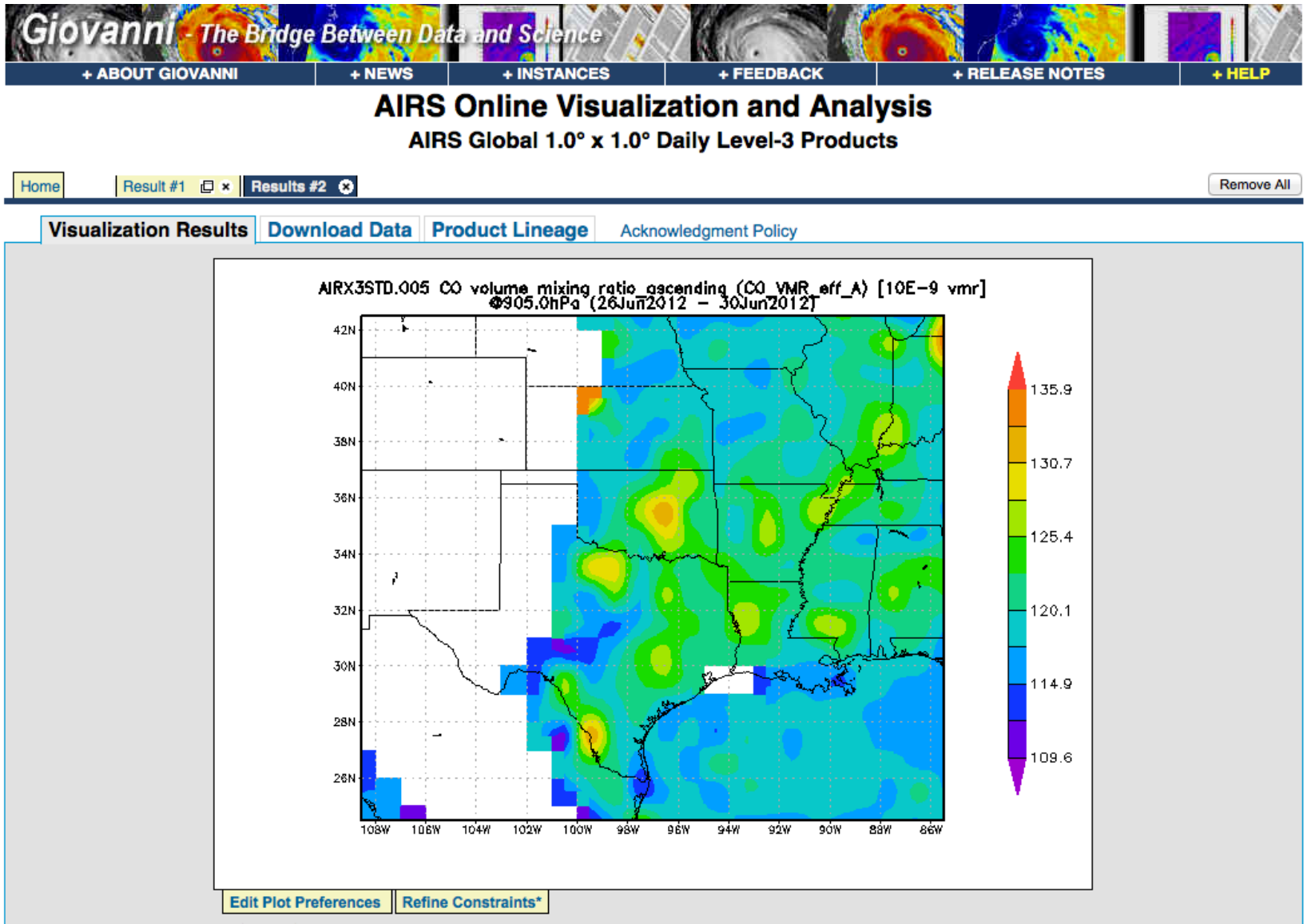
The HDFView User's Guide, accessible from the top of this page, contains detailed information on using HDFView.

Access to AIRS CO data/images

- GES-DISC
  - Level 2 and 3
  - HDF4 and NetCDF format
- GIOVANNI
  - Uses Level 3 $1^{o}X1^{o}$ gridded data
  - Outputs include:
    - Subset data in ASCII, NetCDF
    - KMZ format for Google Earth visualizations
- AIRS Near Real Time (NRT) Images and Products
  - Uses Level 2 ungridded data
  - Outputs include:
    - PNG, GeoTIFF images
    - KMZ format for Google Earth (both daytime and nighttime images)
  - CAVEAT: Only stores images going back 9 days from the present day.
- HDFLook – with limited capabilities.
- Panoply
  - Used to visualize HDF format files
  - Used to convert HDF to KMZ files for Google Earth visualizing

GIOVANNI Level 3

http://gdata1.sci.gsfc.nasa.gov/daac-bin/G3/gui.cgi?instance_id=AIRS_Level3Daily



Giovanni - The Bridge Between Data and Science

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AIRS Online Visualization and Analysis

AIRS Global 1.0° x 1.0° Daily Level-3 Products

Home | Result #1 | Results #2 | Remove All

Visualization Results | **Download Data** | Product Lineage | Acknowledgment Policy

Download source data products and data products derived from Giovanni processing stages. For simplicity purposes, only the initial retrieval and final rendering phases are currently accessible for downloading. Supported download formats are HDF, NetCDF(NCD), ASCII, and KMZ (ASCII is available only when the array size is within about half-million points). To **download multiple files** at once, select the desired files (from any section) by clicking on their associated checkboxes, and then click '**Download in Batch**'. **Note:** that '**n/a**' means that a file size or other column value is not available; '**saa**' means that a file is exactly the same as the previous one in the list. Also, not all services and data products support all download file formats.

Initial Data Retrieval

Download in Batch

Data Product	Start Time	File Size (b)	Download Files ☐ HDF ☐ NCD ☐ ASC
AIRX3STD.005 (CO_VMR_eff_A)	2012-06-26T00:00:00Z	30216465	HDF NCD ASC
AIRX3STD.005 (CO_VMR_eff_A)	2012-06-27T00:00:00Z	30193327	HDF NCD ASC
AIRX3STD.005 (CO_VMR_eff_A)	2012-06-28T00:00:00Z	30169781	HDF NCD ASC
AIRX3STD.005 (CO_VMR_eff_A)	2012-06-29T00:00:00Z	29170488	HDF NCD ASC
AIRX3STD.005 (CO_VMR_eff_A)	2012-06-30T00:00:00Z	29461972	HDF NCD ASC

Download the individual files

Download Data file that create the image

Two Dimensional Map Plot

Download in Batch

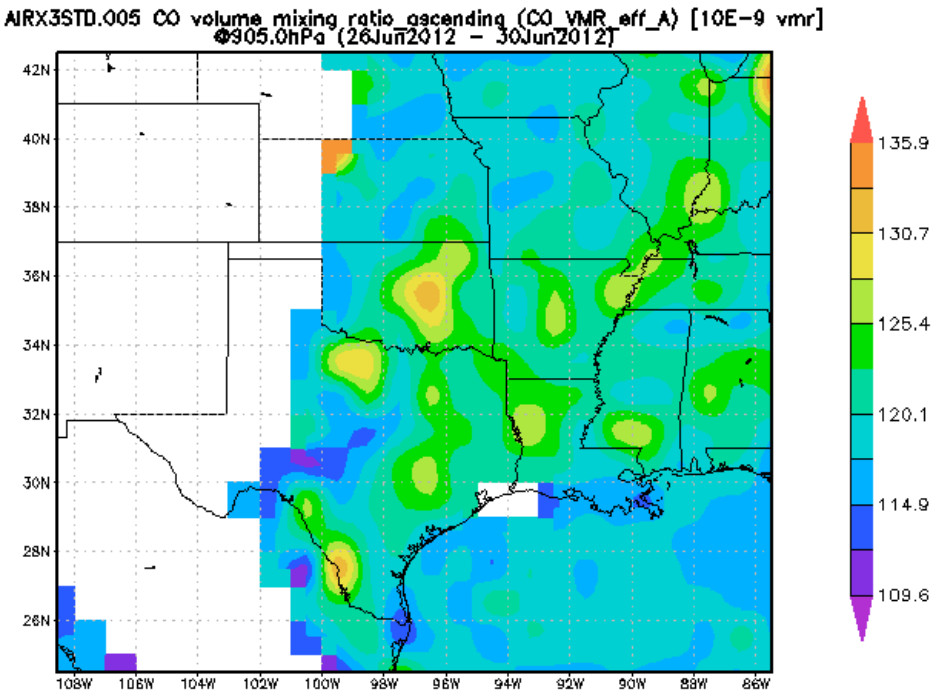
Input Files	Start Time	File Size (b)	Download Files
AIRX3STD.005 (CO_VMR_eff_A)	2012-06-26T00:00:00Z	6661	HDF NCD ASC

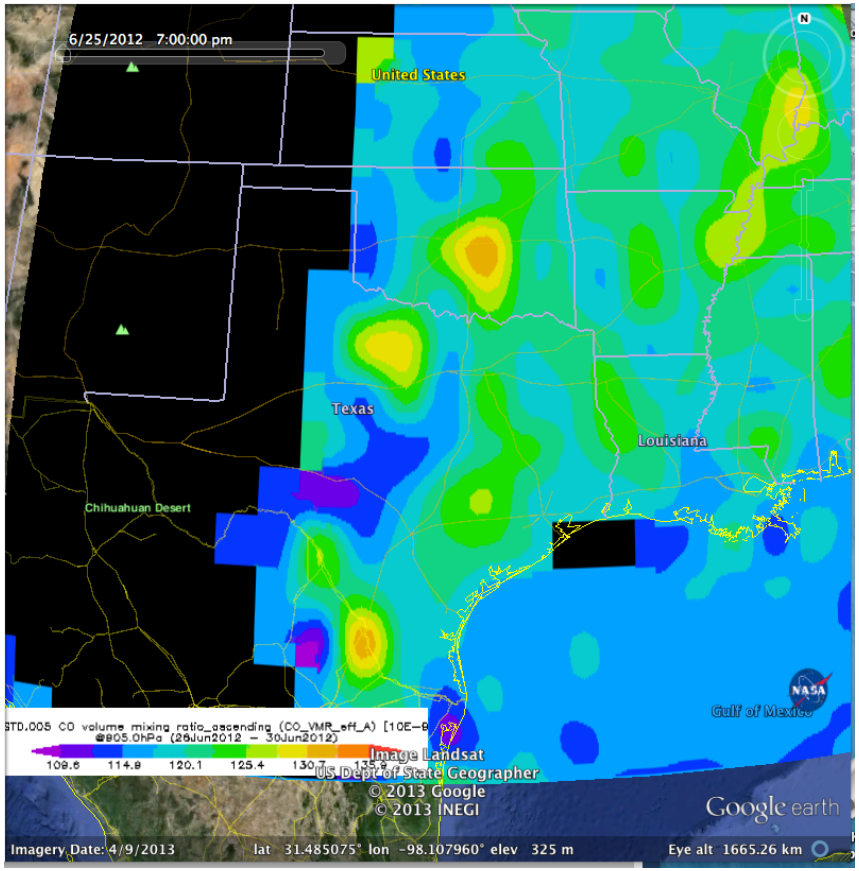
Output Files		KMZ
CO_VMR_eff_A.AIRX3STD.005.AreaMap.2012-06-26.gif	21947	KMZ

Download Image

Download KMZ File

http://gdata1.sci.gsfc.nasa.gov/daac-bin/G3/gui.cgi?instance_id=AIRS_Level3Daily
IF AIRS Level 3 1x1 degree resolution is too course then another option is to use Level 2 data – either NRT or downloaded from the Goddard DISC.





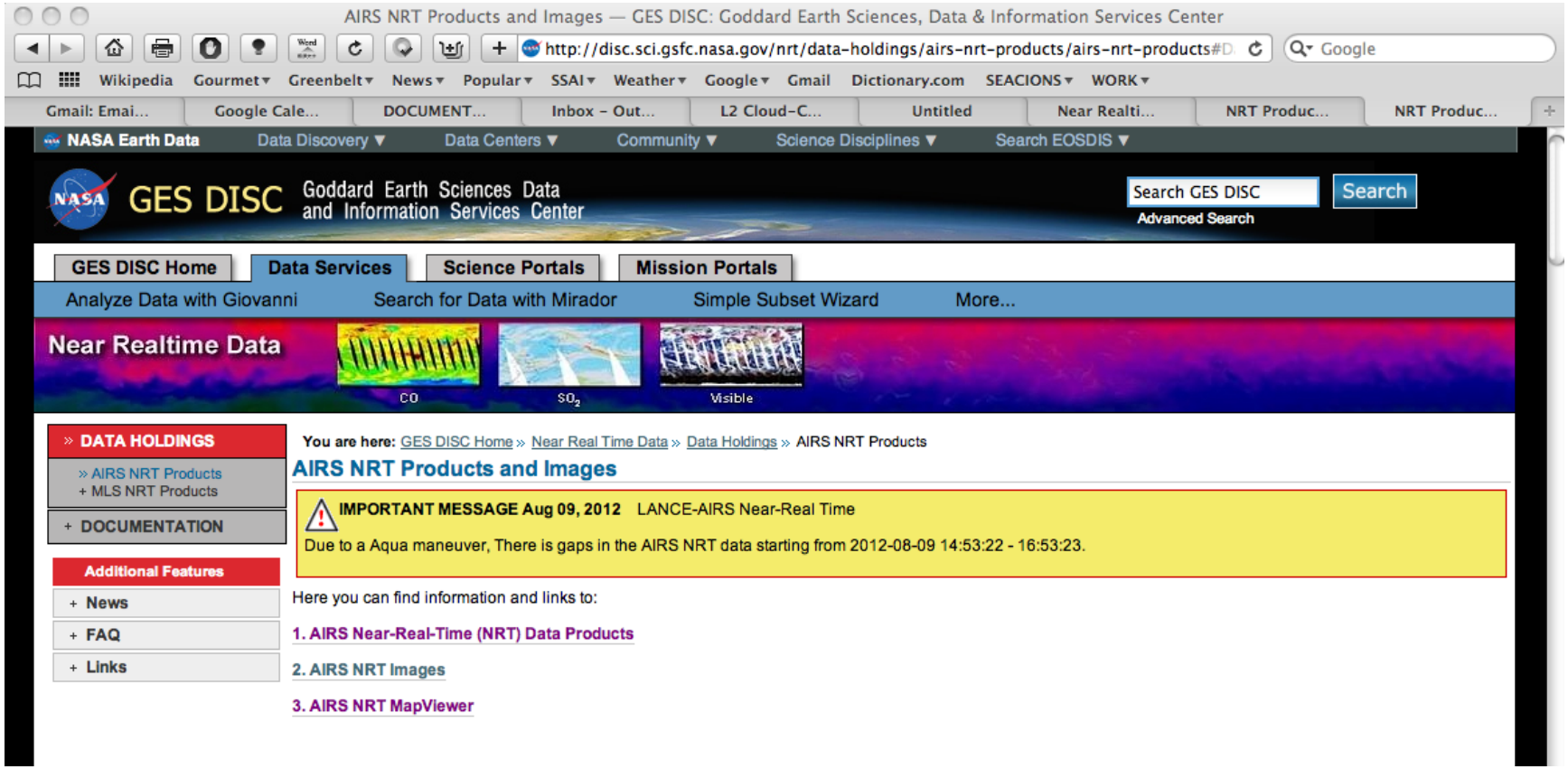
Access to AIRS CO data/images

- GES-DISC
  - Level 2 and 3
  - HDF4 and NetCDF format
- GIOVANNI
  - Uses Level 3 $1^{o}X1^{o}$ gridded data
  - Outputs include:
    - Subset data in ASCII, NetCDF
    - KMZ format for Google Earth visualizations
- AIRS Near Real Time (NRT) Images and Products
  - Uses Level 2 ungridded data
  - Outputs include:
    - PNG, GeoTIFF images
    - KMZ format for Google Earth (both daytime and nighttime images)
  - CAVEAT: Only stores images going back 9 days from the present day.
- HDFLook – with limited capabilities.
- Panoply
  - Used to visualize HDF format files
  - Used to convert HDF to KMZ files for Google Earth visualizing

AIRS NRT Products and Images Website: http://disc.sci.gsfc.nasa.gov/nrt/data-holdings/airs-nrt-products/

There is a **Near-Real Time (NRT)** product that exports KMZ files but is available for data going back 9 days only. This product is great for capturing events **as they happen!**

NRT Level 2 data, PNG, GeoTIFF, and KMZ files are availabe at this site. **BUT historic data is not available.**



AIRS NRT Products and Images Website:
http://disc.sci.gsfc.nasa.gov/nrt/data-holdings/airs-nrt-products/

To get KMZ files for Google Earth:

1. click on “2. AIRS NRT Images”
2. Click on where it says ‘KMZ’

AIRS NRT Products and Images — GES DISC: Goddard Earth Sciences, Data & Information Services Center

http://disc.sci.gsfc.nasa.gov/nrt/data-holdings/airs-nrt-products/airs-nrt-products#K

Wikipedia Gourmet Greenbelt News Popular SSAI Weather Google Gmail Dictionary.com SEACIONS WORK

Gmail: Emai... | Google Cale... | DOCUMENT... | Inbox - Out... | L2 Cloud-C... | Untitled | Near Realti... | NRT Produc... | NRT Produc...

2.3. KMZ, the compressed Keyhole Markup Language (KML)

KML is an XML-based language schema for expressing geographic annotation and visualization on existing or future Internet-based, two-dimensional maps and three-dimensional Earth browsers, like GoogleEarth. We link here to the **KMZ** - the compressed version of KML - because browsers can attempt to open KML as plain XML file, whereas our goal is to view global imagery, through GoogleEarth, or other relevant browser. An important distinction in this approach is that one file can contain multiple images ("Places") that can be overlayed for simultaneous three-dimensional views. The KMZ below can be easily combined and overlayed in various ways, using for instance GoggleEarth's "Places" and "Layers" folders.

You must have GoogleEarth (or other appropriate tool) installed on your computer to view the **KMZ** as images.

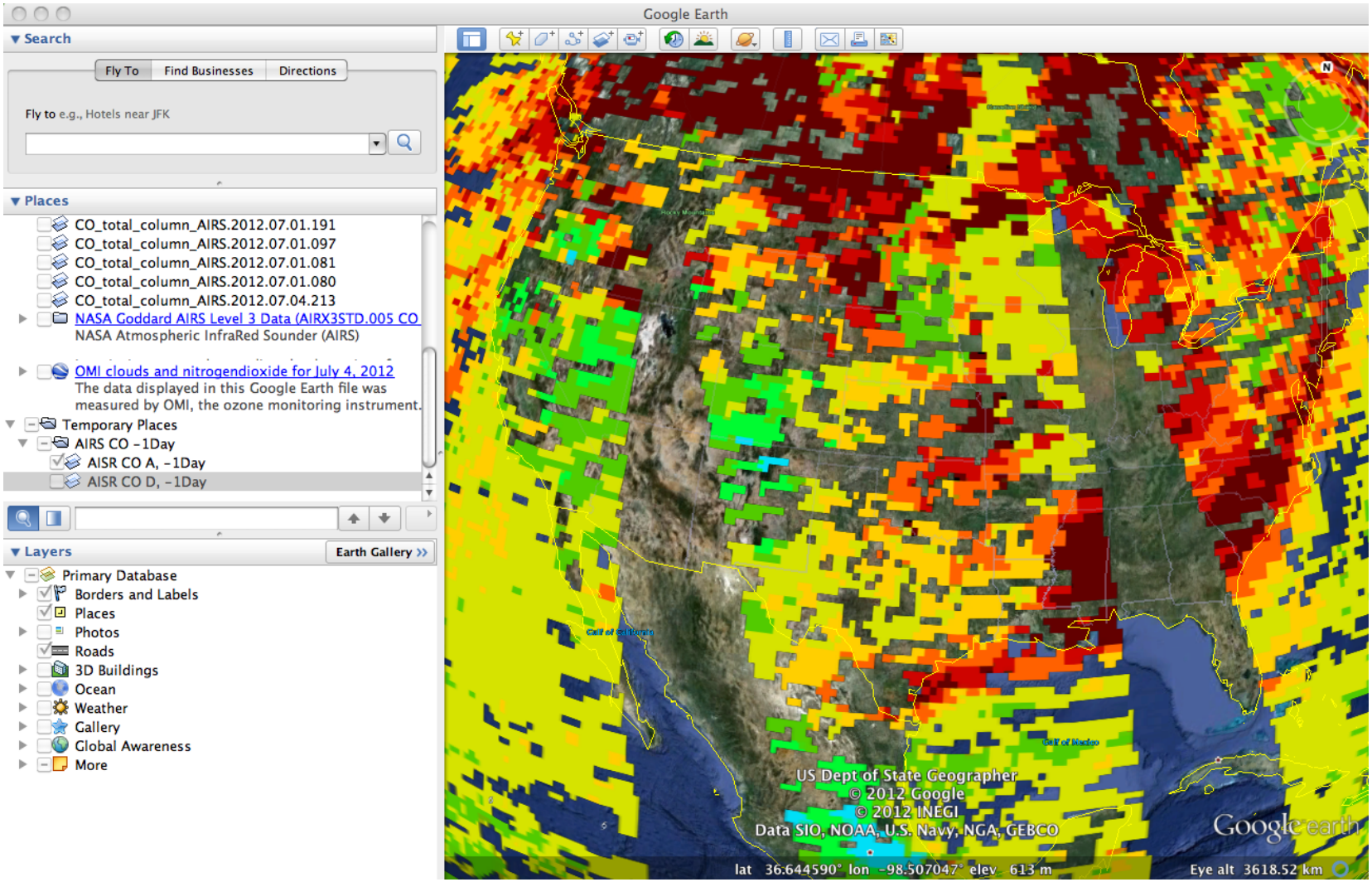
KMZ Format

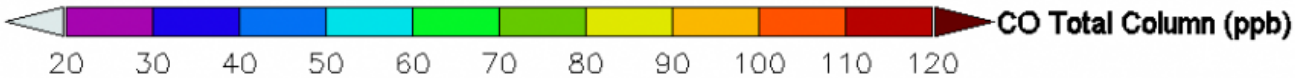
RGB* (Visible 3-km)	Today	Yesterday	-2 Days	-3 Days	-4 Days	-5 Days	-6 Days	-7 Days	-8 Days	-9 Days
IR_Precip_Est	Today	Yesterday	-2 Days	-3 Days	-4 Days	-5 Days	-6 Days	-7 Days	-8 Days	-9 Days
BT_diff_SO2	Today	Yesterday	-2 Days	-3 Days	-4 Days	-5 Days	-6 Days	-7 Days	-8 Days	-9 Days
Prata_SO2	Today	Yesterday	-2 Days	-3 Days	-4 Days	-5 Days	-6 Days	-7 Days	-8 Days	-9 Days
CO	Today	Yesterday	-2 Days	-3 Days	-4 Days	-5 Days	-6 Days	-7 Days	-8 Days	-9 Days
Dust Score	Today	Yesterday	-2 Days	-3 Days	-4 Days	-5 Days	-6 Days	-7 Days	-8 Days	-9 Days

***Note**:

- AIRS NRT imagery is broken into tiles that are seamlessly served as one image, to speed up regional viewing. Even though the Visible false color RGB are broken into tiles too, their global coverage at 3-km resolution still makes the tiles very big. Please, allow more time the RGB image to refresh in your application.
- The **Prata_SO2** images are generated by an algorithm authored by Fred Prata, Norwegian Institute for Air Research.

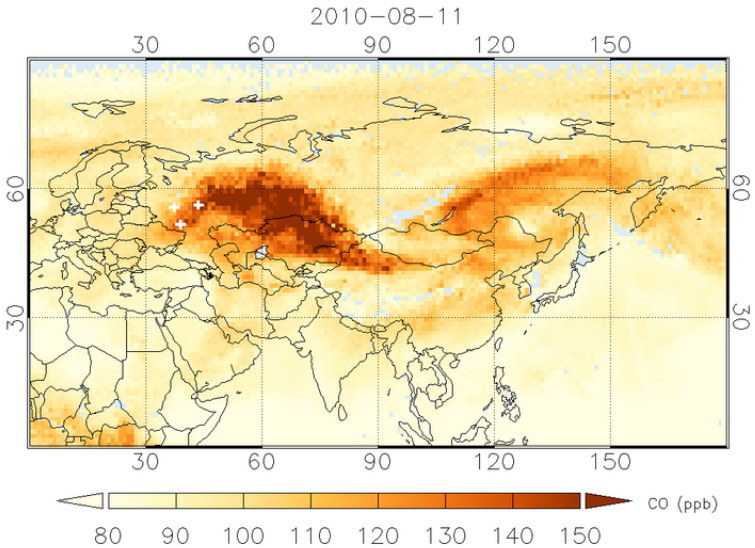
Note: These NRT data are in parts per billion
A = Ascending (daytime) and D = Descending (nighttime) are included.

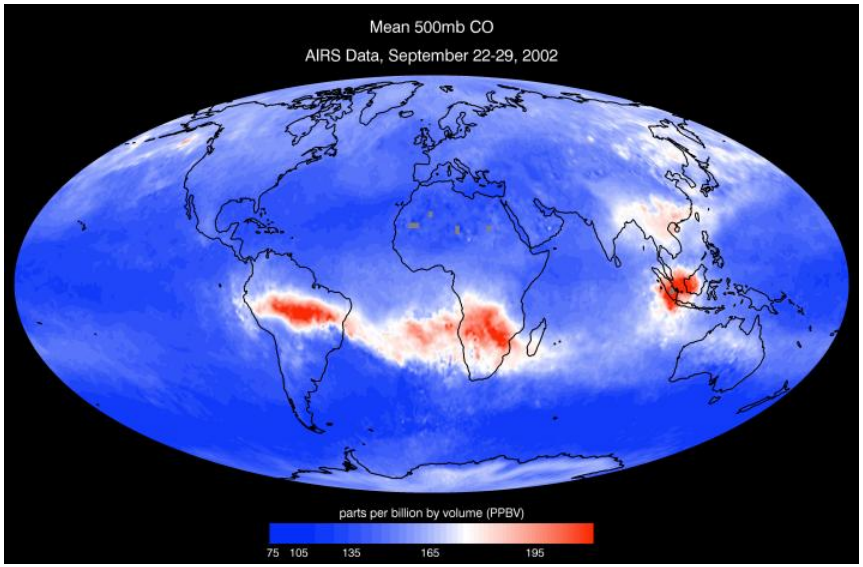




CO Imagery

AIRS – Atmospheric Infrared Sounder





- AIRS Homepage: http://airs.jpl.nasa.gov/
- Version 5 documentation = http://disc.sci.gsfc.nasa.gov/AIRS/documentation/v5_docs
- Data from GES DISC:
http://disc.sci.gsfc.nasa.gov/AIRS/data-holdings/by-data-product/data_products.shtml
- Near-Real-Time imagery and KMZ files for AIRS CO.

http://disc.sci.gsfc.nasa.gov/nrt/data-holdings/airs-nrt-products/airs-nrt-products - WMS

- Link page for archival and Near-Real-Time imagery as well as special collections.

http://disc.sci.gsfc.nasa.gov/AIRS/additional/gallery

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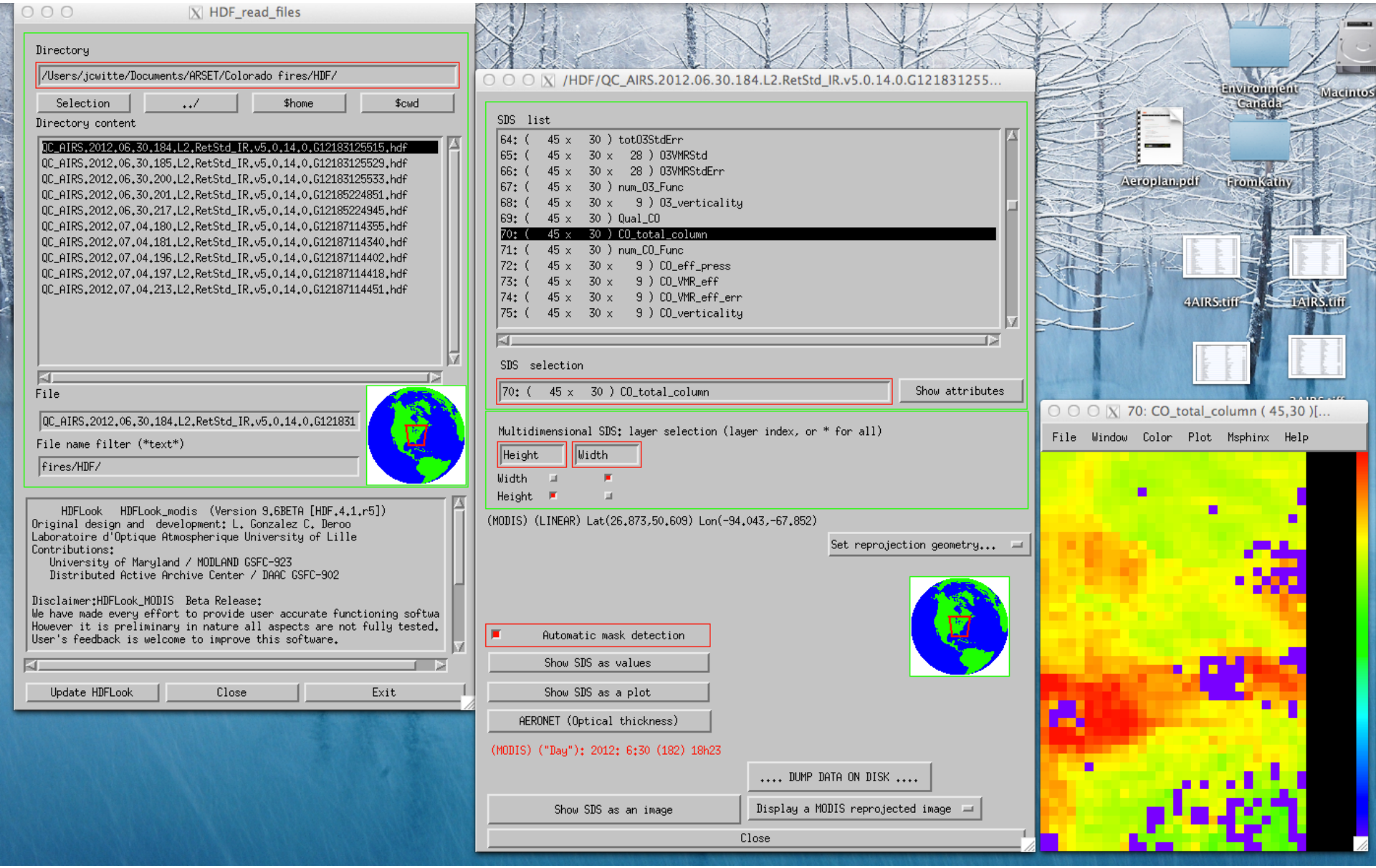
  - CAVEAT: Only stores images going back 9 days from the present day.
- HDFLook – with limited capabilities and a large learning curve.
- Panoply
  - Used to visualize HDF format files
  - Used to convert HDF to KMZ files for Google Earth visualizing

HDFLook can read AIRS L2 CO data (HDF4 Format)



Access to AIRS CO data/images

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Panoply – netCDF, HDF, and GRIB data Viewer

http://www.giss.nasa.gov/tools/panoply/

National Aeronautics and Space Administration
Goddard Institute for Space Studies

Goddard Space Flight Center
Sciences and Exploration Directorate
Earth Sciences Division

- GISS Home
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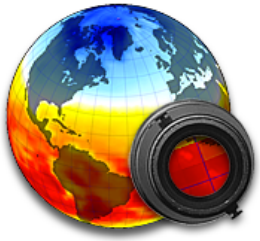
- Datasets & Images
- Publications
- Software
- Education
- Events
- About GISS

Panoply netCDF, HDF and GRIB Data Viewer

panoply \PAN-uh-plee\, noun: 1. A splendid or impressive array. ...

Panoply is a cross-platform application which plots geo-gridded arrays from netCDF, HDF and GRIB datasets. You can:

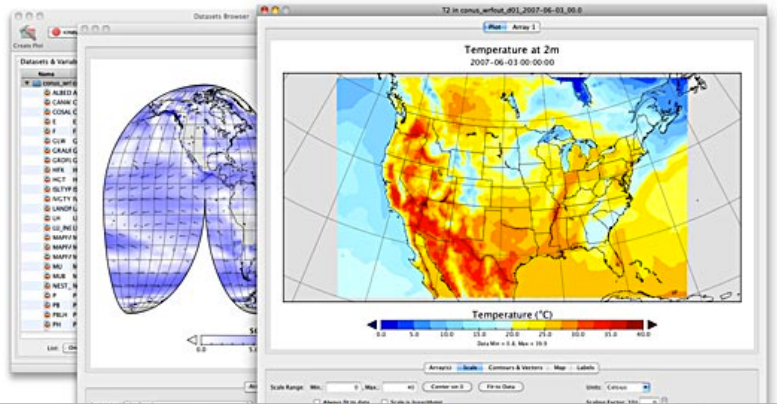
- Slice and plot specific latitude-longitude, latitude-vertical, longitude-vertical, or time-latitude arrays from larger multidimensional variables.
- Combine two arrays in one plot by differencing, summing or averaging.
- Plot lon-lat data on a global or regional map (using any of over 75 map projections) or make a zonal average lineplot.
- Overlay continent outlines or masks on lon-lat plots.
- Use any ACT, CPT, GGR, or PAL color table for scale colorbar.
- Save plots to disk GIF, JPEG, PNG or TIFF bitmap images or as PDF or PostScript graphics files.
- Export lon-lat map plots in KMZ format.
- Export animations as AVI or MOV video or as a collection of invididual frame images.
- Explore remote THREDDS and OpenDAP catalogs and open datasets served there.



The current version of Panoply is 3.1.5, released 2012-09-20.

Panoply requires that your computer have a **Java SE 6** runtime environment, or better, installed.

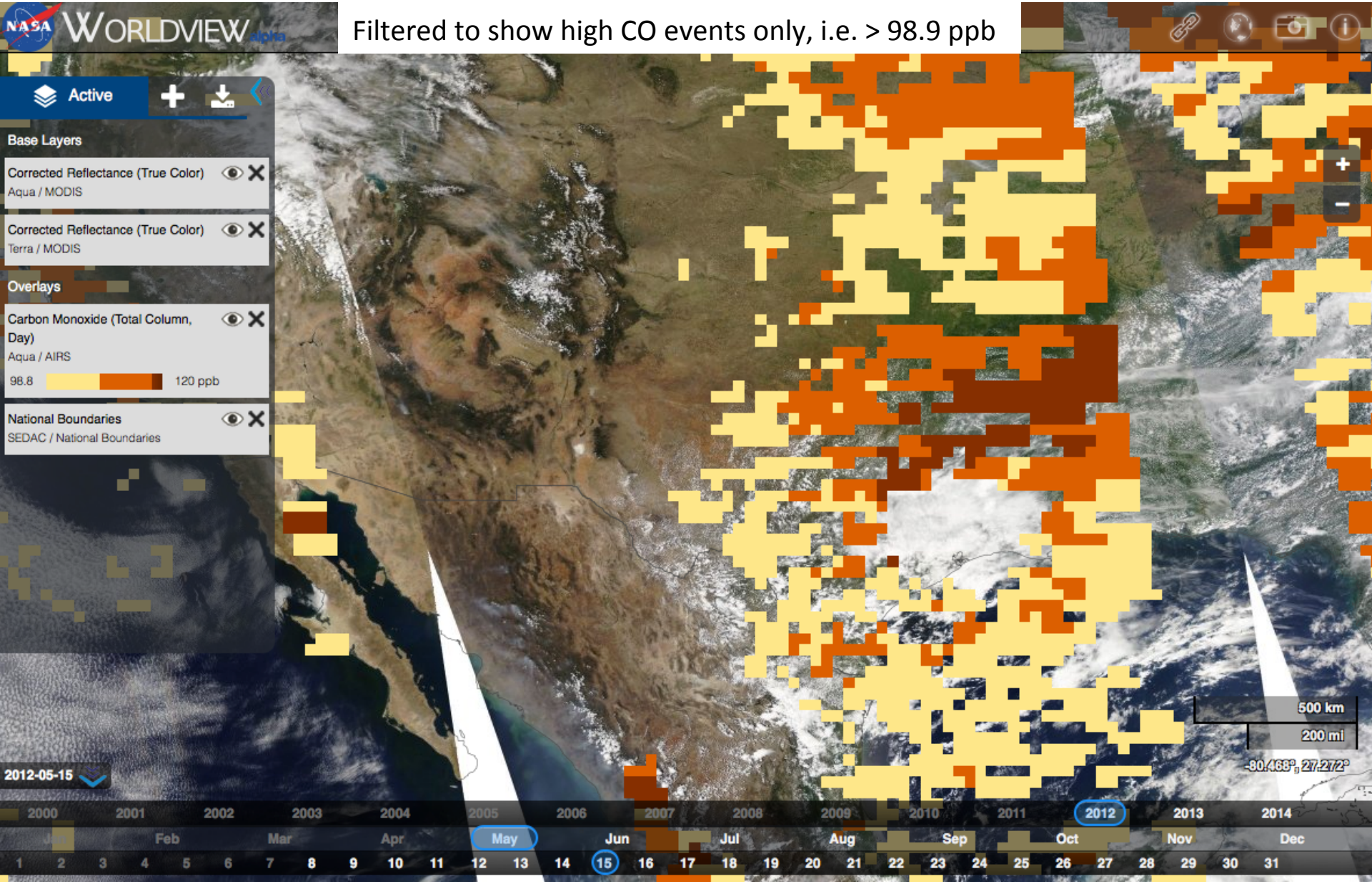
To be plotted by Panoply, dataset variables must be tagged with metadata information using a convention such as CF.



Worldview

https://earthdata.nasa.gov/labs/worldview/

Filtered to show high CO events only, i.e. > 98.9 ppb



Access to MOPITT Data and Imagery

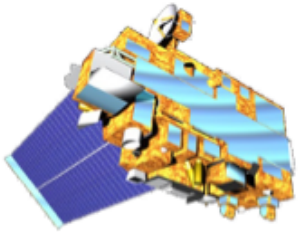
MOPITT now has an interactive visualizer

Homepage: http://www.acd.ucar.edu/mopitt/

MEASUREMENTS OF POLLUTION IN THE TROPOSPHERE (MOPITT)

THE MOPITT MISSION

MOPITT is an instrument flying on NASA's Earth Observing System Terra spacecraft, measuring tropospheric carbon monoxide (CO) on the global scale. MOPITT measurements enable scientists to analyze the distribution, transport, sources and sinks of CO, a trace gas produced by methane oxidation, fossil fuel consumption and biomass burning. MOPITT has been operational since March 2000.



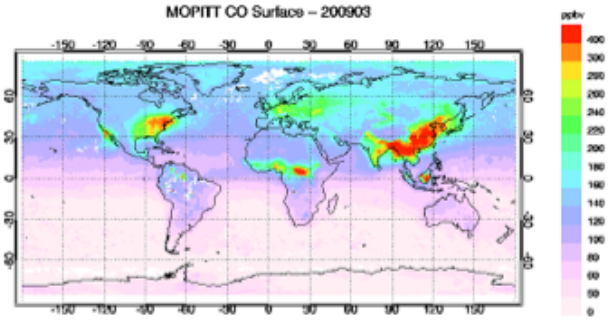
MOPITT PRODUCT AVAILABILITY

MOPITT Version 6 Level 2 and Level 3 products are now available for the entire MOPITT mission. Generally, V6 Level 2 and Level 3 products should become available between three weeks and two months after the actual observations; this data latency is the result of the dependency on the MERRA reanalysis. Version 4 and Version 5 Level 2 and Level 3 products are also available. See Data Products for descriptions of the different products. User's Guides available on the Publications page should be consulted before attempting to analyze the MOPITT products.

- NASA Data Archives via Reverb
- ASDC Data Pool
- ASDC MOPITT Subsetter (V5 Level 2 Products only)

MOPITT PRODUCT VISUALIZATION

Global plots of MOPITT CO products at 1 degree horizontal resolution can be viewed for each day and month of the MOPITT mission.



V6 Plots

- V6 TIR-only Daily Plots / Monthly Plots
- V6 NIR-only Daily Plots / Monthly Plots
- V6 TIR/NIR Daily Plots / Monthly Plots

V5 Plots

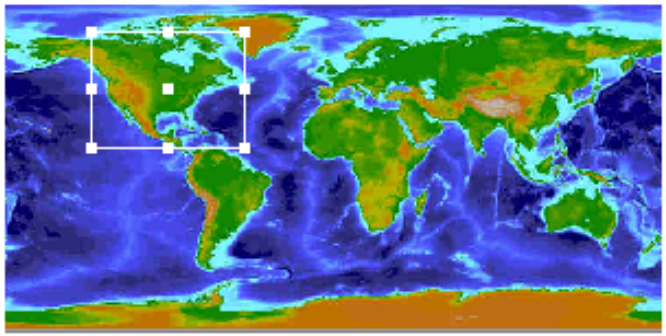
- V5 TIR-only Daily Plots / Monthly Plots
- V5 NIR-only Daily Plots / Monthly Plots
- V5 TIR/NIR Daily Plots / Monthly Plots

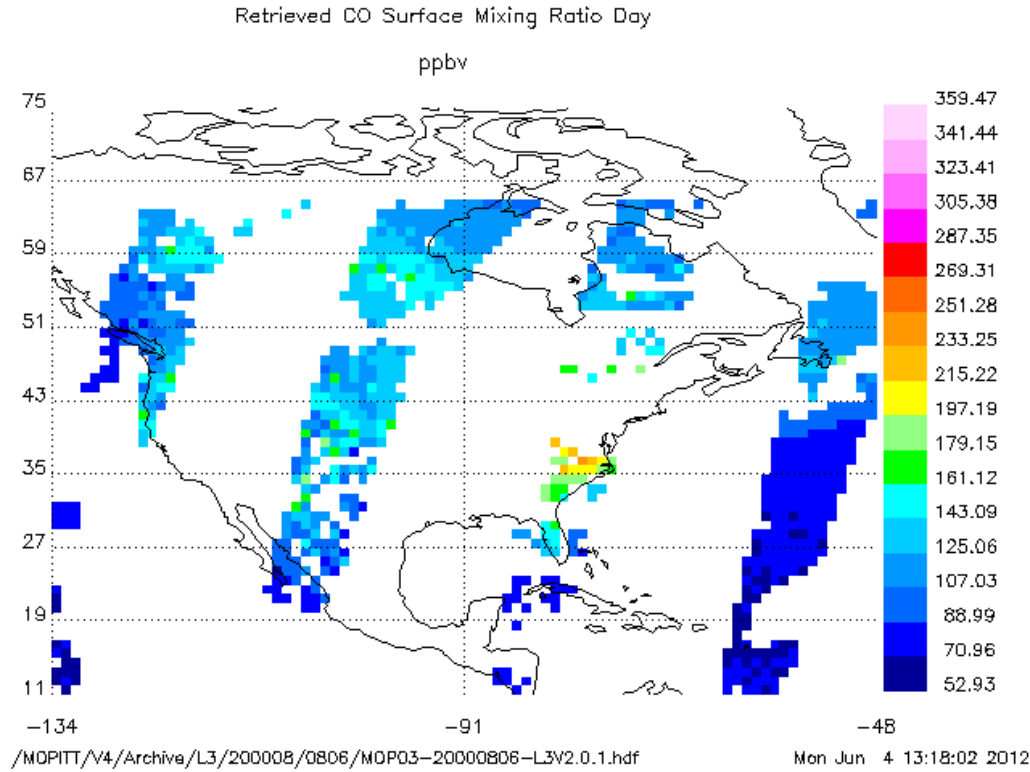
V4 Plots

- V4 TIR-only Daily Plots / Monthly Plots

- Interactive Data Viewers for V4, V5, and V6 MOPITT products

http://mopfl.acd.ucar.edu:8080/webviewV4/selectmopittfile





Current File: /MOPITT/V4/Archive/L3/200008/0806/MOP

Select Level 3 variable to plot: Retrieved CO Surface

Select preferred data time to use: Day Nigh

Projection	Colorbar	Plot Options
Cylindrical Equidistance	Data Max to Min	Filled Pixels
	High - Low	Black Background
	User Defined	Political Boundaries
		Size: Medium

Return to File Select | Reset Form | Export ASCII File | Plot

Unlike AIRS - there is NO real-time MOPITT data available
http://www2.acd.ucar.edu/mopitt/visualization.shtml

MOPITT

Home » Visualization

VISUALIZATION

QUICK-LOOK IMAGES

Global plots of MOPITT CO products at 1 degree horizontal resolution can be viewed for each day and month of the MOPITT mission. See the News and Status page for dates of, and reasons for, missing data.

V6 Plots

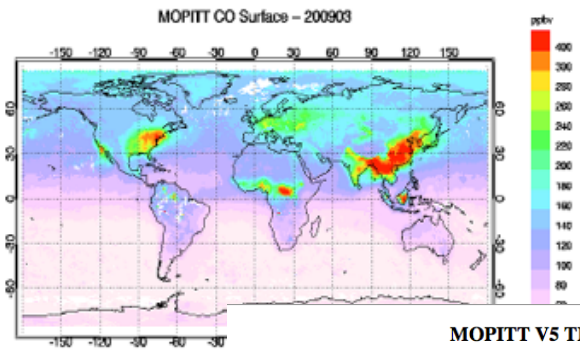
- V6 TIR-only Daily Plots / Monthly Plots
- V6 NIR-only Daily Plots / Monthly Plots
- V6 TIR/NIR Daily Plots / Monthly Plots

V5 Plots

- V5 TIR-only Daily Plots / Monthly Plots
- V5 NIR-only Daily Plots / Monthly Plots
- V5 TIR/NIR Daily Plots / Monthly Plots

V4 Plots

- V4 TIR-only Daily Plots / Monthly Plots



MOPITT V5 TIR/NIR Daytime CO Retrievals - Quick-look Images

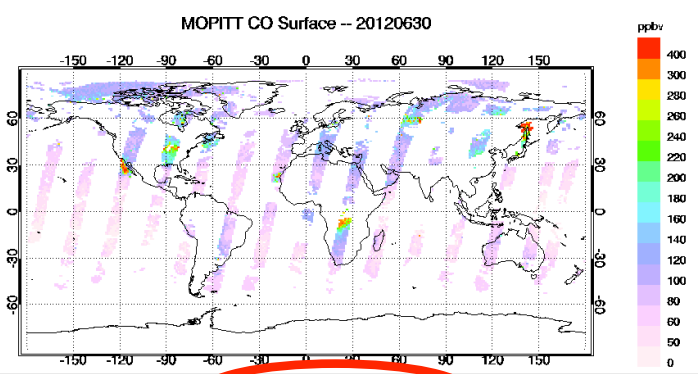
YEAR MONTH DAY LEVEL

MOPITT Data page
Monthly Average Plots 2013 3 8 Column
PLOT
PREVIOUS
NEXT

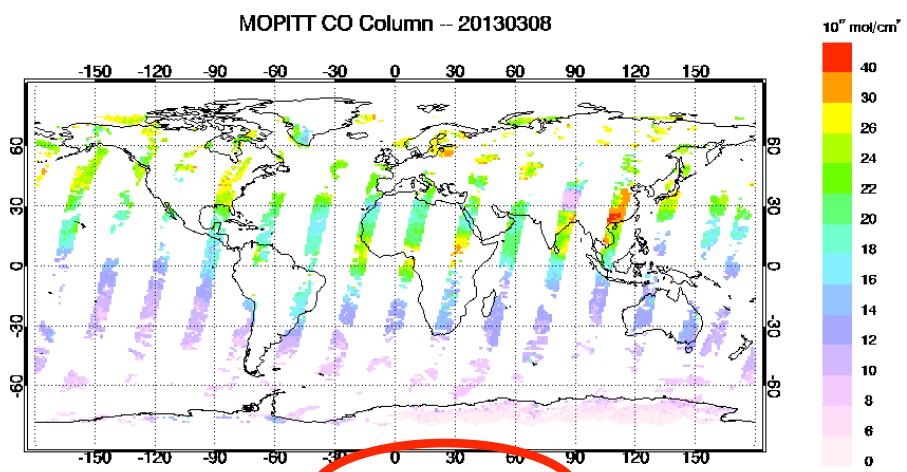
MOPITT V5 TIR/NIR Daytime CO Retrievals - Quick-look Images

YEAR MONTH DAY LEVEL

MOPITT Data page
Monthly Average Plots 2012 6 30 Surface
PLOT
PREVIOUS
NEXT

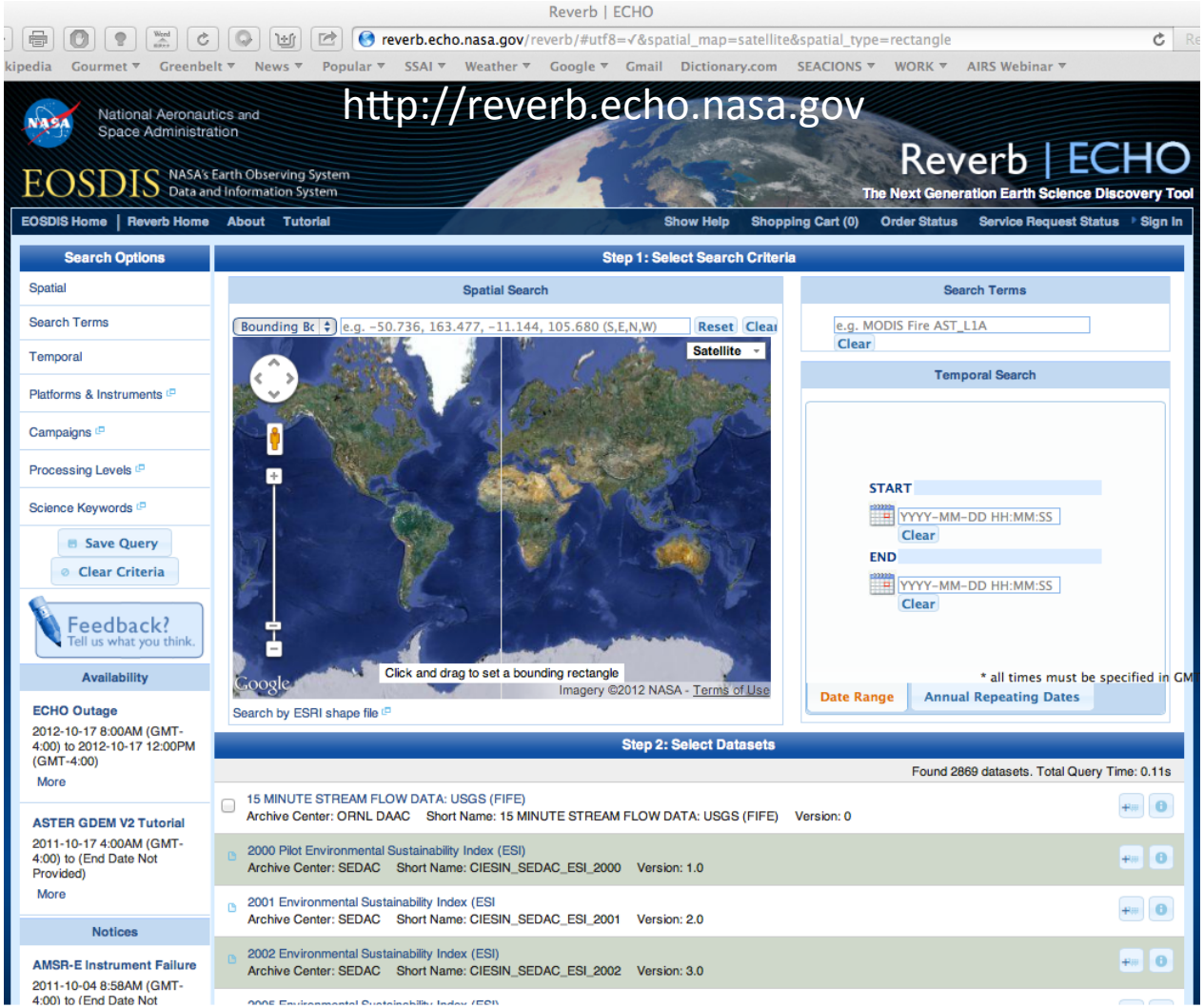


MOPITT Google Earth File



MOPITT Google Earth File

MOPITT (+ all NASA EOS satellite) data are available at EOSDIS – NASA's Earth Observing System Data and Information System



Summary of AIRS and MOPITT Websites

GIOVANNI

http://disc.sci.gsfc.nasa.gov/giovanni

AIRS Near-Real Time (NRT) Products and Images (PNG, GeoTIFF, KMZ)

http://disc.sci.gsfc.nasa.gov/nrt/data-holdings/airs-nrt-products/

AIRS Level 2 Data Products

http://disc.sci.gsfc.nasa.gov/AIRS/data-holdings/by-data product/data_products.shtml

EOSDISC Reverb global search tool: http://reverb.echo.nasa.gov

Mirador Search/Get date: http://mirador.gsfc.nasa.gov

AIRS Homepage: http://airs.jpl.nasa.gov/

MOPITT Homepage: http://www.acd.ucar.edu/mopitt/

MOPITT Daily/Monthly images:

http://www.acd.ucar.edu/mopitt/visualize.shtml

http://mopfl.acd.ucar.edu:8080/webviewV4/selectmopittfile

HDF Zoo – provides examples on how to read and visualize various NASA HDF/HDF-EOS files using IDL and MATLAB

http://hdfeos.org/zoo/

HDF - EOS Tools and Information Center

HOME | EXAMPLES | SOFTWARE | WORKSHOPS | FORUM | HELP | Search GO

COMPREHENSIVE EXAMPLES

This page provides comprehensive examples on how to access and visualize various NASA HDF/HDF-EOS files using IDL ®, MATLAB® and NCL. Other tools and programming languages examples can be found here.

Please read this special note first before you proceed further.

You can find examples quickly using the search box below. Please add keyword **'zoo'** first to limit the search within this *Comprehensive Examples* page. Then, type the **first few characters** from the NASA HDF/HDF-EOS file name such as **MOD06**. Finally, you can limit the search by providing one of programming language keywords: **NCL, IDL, or MATLAB**.

Search Examples by Product Name e.g. zoo MOD06 MATLAB GO

For a list of examples for the different data centers, click on the product name in the table below.

NASA Data Centers	Product Examples using different tools
GESDISC	AIRS TRMM MERRA TOMS OMI MLS HIRDLS BUV SWDB GSSTF GOSAT/ACOS
LAADS	MOD MYD NPP VIIRS
LP DAAC	MCD MOD MYD VIP WELD
LaRC	CERES MISR MOPITT TES
NSIDC	AMSR_E MODIS NISE ICESat/GLAS
PO.DAAC	AVHRR SeaWinds QuikSCAT Aquarius
Ocean Biology Processing Group	OCTS SeaWiFS CZCS MODISA MODIST
GHRC	LIS
ICESat-2	MABEL

Table 1: Sample Data Files and Code Examples

We also provide examples for other data centers that produce HDF4 files.

Other Data Centers	Product Examples using different tools
CloudSAT Data Processing Center	CloudSAT
Ocean Productivity	Net Primary Production

Table 2: Sample Data Files and Code Examples from Other Data Centers

We also extracted and documented information for sample HDF-EOS2/HDF4 and HDF-EOS5 files that are useful to determine the EOS contents stored in the sample files. Please click here for HDF-EOS2/HDF4 and here for HDF-EOS5 to read comprehensive description and retrieve sample files.